

# Chapter 10 Evaluation of parking and land use

## 10.1 Overview

### Introduction

This chapter describes methods for economic efficiency evaluation of parking and land use projects, which may comprise the whole of a TDM programme or may be a component of a wider programme. The main focus of this chapter at present (October 2005) is on parking management with future additions to be made on land use management. Parking and land use strategies are described in chapter 2. Placing limits on parking supply is an important component of land use control for new developments.

Programmes that employ parking and/or land use management to encourage alternative mode use may also have components of infrastructure provision/improvement, passenger transport provision/improvement, or financial incentives/subsidies.

Reference 1 provides further information about parking and land use management.

Parking and land use management may be considered for funding by Land Transport New Zealand depending on the activity under consideration and whether it is integral to Land Transport New Zealand's goals.

### In this chapter

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## 10.2 Travel impacts

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**Parking reduction**

Overseas experience suggests that the ability to reduce or limit car mode share to an area, workplace or institution is dominated by the availability of private vehicle parking.

A comprehensive parking management programme that includes several strategies (shared parking, more accurate parking requirements, pricing, cash out, etc) can often reduce private vehicle trips and therefore parking requirements. With appropriate parking management motorists still have adequate parking, although they may need to walk somewhat farther and/or pay directly rather than indirectly for parking.

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**Parking spill-over impacts**

Abundant, free parking encourages driving and helps create dispersed, private vehicle-dependent land use patterns. Parking management can significantly reduce private vehicle travel, particularly if implemented as part of a comprehensive TDM programme.

Parking spill-over problems can be addressed directly with management, pricing and enforcement strategies. On-street parking can be limited to residents, which can be enforced by issuing permits to residents, or simply in response to complaints. Residential neighbourhoods can be designated 'parking benefit districts,' where on-street parking is priced (residents can be exempt), with revenues used for neighbourhood enhancement or to reduce property rates. Another approach is to provide some sort of compensation to residents who experience parking problems.

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**Parking elasticity**

Private vehicle travel tends to be quite sensitive to parking supply and price. The price elasticity of parking is  $-0.1$  to  $-0.3$ , meaning that a 10 percent increase in parking charges reduces driving by 1 to 3 percent. Charging cost-recovery prices (ie rates that recover the full costs of providing parking facilities) reduces drive alone commuting, particularly if implemented with other commute trip reduction strategies.

Parking management can help shift private vehicle travel to alternative modes, and improves access by creating more clustered, multi-modal land use patterns. As the number of parking spaces per employee in a commercial centre declines, use of alternative modes tends to increase.

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## 10.3 Business impacts

### **Business impacts**

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If building rent represents 20 percent of a business's total costs, and parking represents 25 percent of rent costs, reducing parking costs by 40 percent results in a two percent reduction in total costs. If the business has a 10 percent profit margin, this increases profits by 20 percent.

Parking restrictions and pricing can reduce business activity in an area and shift travel to more suburban locations, although these impacts depend on specific conditions, including how prices are structured, and the quality of travel and location alternatives. When parking revenues are used to improve local streetscape conditions or to fund transport alternatives they can increase business activity in a downtown area.

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## 10.4 Equity impacts

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### **Parking**

The equity impacts of parking management depend on the type of measures used, where and how they are applied, and the quality of transport alternatives. Measures that reduce subsidies and charge motorists directly for the parking costs they impose tend to increase fairness (horizontal equity).

Some parking management measures, such as parking cash out and location efficient development can provide significant benefits to lower income and transport-disadvantaged people. Some parking management measures benefit people who are transport disadvantaged by helping to create less private vehicle-dependent land use patterns, and reducing the parking costs they bear through taxes, rents and employment benefits.

Parking pricing can be regressive, but overall equity impacts depend on how revenues are used and the quality of travel choices. If revenues are used to benefit lower-income households and there are good travel alternatives to driving, pricing and taxes can be progressive overall.

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## 10.5 Costs

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### **Increased management and transaction costs**

Parking management often increases administrative responsibilities for public officials and facility managers, and additional responsibilities and inconvenience on motorists.

Parking charges and restrictions in one area may cause motorists to park in other areas where they create congestion problems. This may increase management and enforcement costs, and create conflicts between neighbours.

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### **Parking cost savings**

Parking cost savings depend on the ability of facility managers to sell, lease or rent excess parking capacity. For example, if a business has 100 parking spaces, and its commute trip reduction programme reduces demand to 60 parking spaces, it will have 40 parking spaces that are no longer needed. The business will need to sell, lease or rent these spaces, or convert the land to other uses, in order to benefit from this reduced demand.

Some counties use parking brokerage services, sometimes through a transport management association, a chamber of commerce or other organization to help businesses capture parking cost savings.

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## 10.6 Benefits

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### Introduction

Benefits of parking management that reduces total automobile trips include:

- traffic congestion reduction
- road accident savings
- transport user cost savings
- parking user savings
- reduced vehicle emissions
- other reduced environmental impacts
- improved community liveability
- increased transport options.

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### Parking user savings

The magnitude of parking user savings (in financial terms) that result from parking management depends on specific conditions, including the cost per parking space and how much parking can be reduced.

The following gives an example of potential parking user cost savings. If a comprehensive parking management programme can reduce parking requirements by a third, and annualised parking facility costs average \$1,200 in urban conditions and \$600 in suburban conditions, then:

- Cashing out free parking is equivalent to a three percent wage increase for an employee earning \$40,000 per year at an urban location, and a 1.5 percent wage increase for suburban employees.
  - If two parking spaces are currently included with accommodation, then decoupling parking (renting parking spaces separately) provides \$100 monthly savings for an urban household that only owns one vehicle, and \$200 monthly savings if it owns no vehicles. This represents a 12-25 percent reduction from an \$800 per month rent or mortgage payment. Suburban households save half this amount, a 10-20 percent savings from a \$500 per month rent or mortgage payment.
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## 10.6 Benefits, continued

### Parking resource cost corrections

As noted in chapter 3, it is necessary to make resource cost corrections to parking charges to recognise the true resource cost involved.

Average parking costs and resource cost corrections per round trip:

	Peak period commuting trips to:			Off peak trips to:
	Auckland CBD	Wellington CBD	all other destinations	all destinations
Resource cost	\$10.00	\$10.00	\$2.00	\$0.25
Average parking fee	\$2.50	\$3.60	\$0.00	\$0.25
Resource cost correction	\$7.50	\$6.30	\$2.00	\$0.00

For TBhC projects, a smaller resource cost correction is appropriate because it can be assumed that drivers that change modes are more aware of the true resource cost of parking

### Community liveability

Parking management allows greater flexibility in facility location and site design. It gives building managers and developers more options for dealing with parking problems. It gives communities more control over land use, allowing higher density, more walkable urban areas. It can facilitate the preservation of historic buildings and districts, and allows designers to position buildings to meet access, aesthetic and environmental objectives in ways that are impossible if parking requirements are inflexible. Such design flexibility is particularly important for infilling development and areas with high land costs, allowing redevelopment of central business districts and urban communities. Parking management is an important component of efforts to create more efficient and attractive urban conditions (new urbanisation).

### Reduced environmental impacts

Pavement imposes environmental impacts including reduced groundwater recharge, increased stormwater management requirements, reduced greenspace and wildlife habitat, and heat island effects. Parking consumes a significant portion of urban land, particularly in commercial and high-density residential areas. Parking management can reduce the environmental impacts that result from urban sprawl.

## 10.7 References

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1. Victoria Transport Policy Institute ([www.vtppi.org/tdm/.....](http://www.vtppi.org/tdm/.....)), *Online TDM Encyclopedia*. Parking management (...tdm.28.htm and ...tdm.73.htm), land use management (...tdm.104.htm).
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